#### **U.S. Department of Homeland Security**

# CYBERSECURITY AND INFRASTRUCTURE SECURITY AGENCY



CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY

# The Nation's Risk Managers

The Cybersecurity and Infrastructure Security Agency (CISA) is the pinnacle of national risk management for cyber and physical infrastructure



## Who We Are

CISA works with public sector, private sector, and government partners to share information, build greater trust, and lead the national effort to protect and enhance the resilience of the Nation's physical and cyber infrastructure.









#### Presidential Policy Directive 41 – Concurrent Lines of Effort

#### Threat Response

Threat response activities include conducting appropriate law enforcement and national security investigative activities; collecting evidence and gathering intelligence; providing attribution; linking related incidents; identifying additional affected entities; identifying threat pursuit and disruption opportunities; developing and executing courses of action to mitigate the immediate threat; and facilitating information sharing and operational coordination with asset response.

#### Asset Response

- Asset response activities include furnishing technical assistance to affected entities to protect their assets, mitigate vulnerabilities, and reduce impacts of cyber incidents; identifying other entities that may be at risk and assessing their risk to the same or similar vulnerabilities; assessing potential risks to the sector or region, including potential cascading effects, and developing courses of action to mitigate these risks; facilitating information sharing and operational coordination with threat response; and providing guidance on how best to utilize Federal resources and capabilities in a timely, effective manner to speed recovery.

#### Intelligence Support

 Intelligence support and related activities facilitate the building of situational threat awareness and sharing of related intelligence; the integrated analysis of threat trends and events; the identification of knowledge gaps; and the ability to degrade or mitigate adversary threat capabilities.



## ALABAMA PROBATE JUDGES SUMMER CONFERENCE

- Protective Security Advisors (PSA)
  - North and South Districts
- PSA Visits
  - Resources briefing
  - Protected Critical Infrastructure Information (PCII)
  - Training
  - Information Sharing and Outreach
- Security Walk-through
  - What is entails
  - Up to 2 facilities in each county
- Written Report
  - Issues
  - Options for Consideration

# ALABAMA PROBATE JUDGES SUMMER CONFERENCE

North Alabama PSA Greg Carden

Gregory.carden@hq.dhs.gov 202-841-1907

Please contact Greg or I to set up a PSA Visit and Security Walk-through of your facilities.

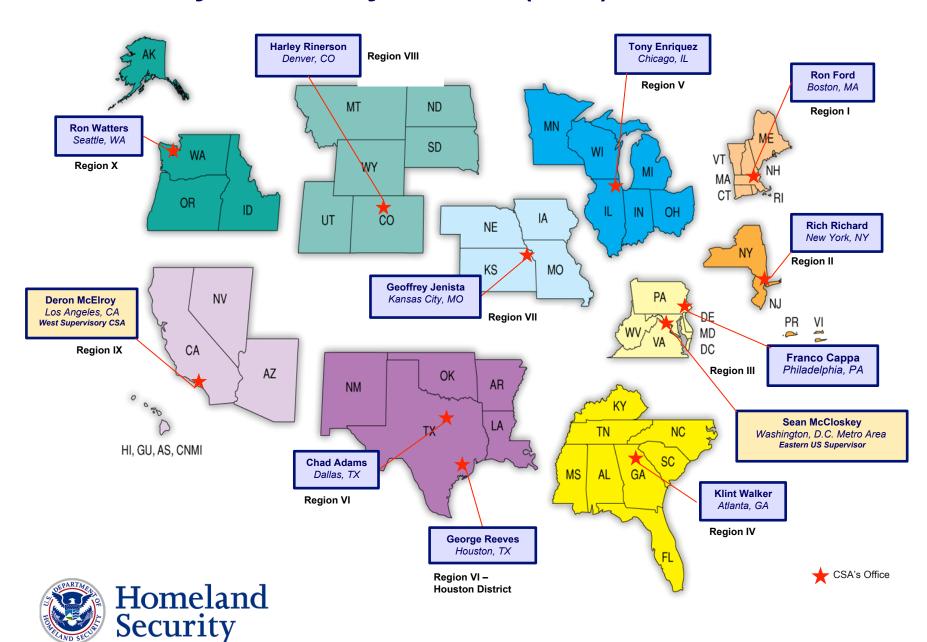
South Alabama PSA Kirk Toth

<u>Kirk.toth@hq.dhs.gov</u>

850-621-3264



#### **Cybersecurity Advisor (CSA) Locations**



#### **CSA Program Mission**

To provide direct coordination, outreach, and regional support in order to protect cyber components essential to the sustainability, preparedness, and protection of the Nation's Critical Infrastructure and Key Resources (CIKR) and State, Local, Territorial, and Tribal (SLTT) governments.

Cyber Security Advisor (CSA) Program in recognition that a regional and national focused cyber security presence is essential to protect critical infrastructure.

CSAs represent a front line approach and promote resilience of key cyber infrastructures throughout the U.S. and its territories.



#### **CSA Program Activities**

#### **CSAs support four key DHS goals:**

Cyber Preparedness

**Risk Mitigation** 

**Incident & Information Coordination** 

Cyber Policy Promotion & Situational Awareness

#### **CSAs facilitate three assessments:**

Cyber Resilience Reviews (CRR)

Cyber Infrastructure Surveys (C-IST)

External Dependency Reviews (EDM)

CSAs participate in local / regional cyber working groups, mostly organized by Federal and state partners



# 16 Critical Infrastructure Sectors & Corresponding Sector-Specific Agencies

| CHEMICAL                | DHS (CISA) | FINANCIAL Treasury                               |
|-------------------------|------------|--|
| COMMERCIAL FACILITIES   | DHS (CISA) | FOOD & USDA & HHS                                |
| COMMUNICATIONS          | DHS (CISA) | GOVERNMENT GSA & DHS (FPS)                       |
| CRITICAL MANUFACTURING  | DHS (CISA) | HEALTHCARE & HHS                                 |
| DAMS                    | DHS (CISA) | INFORMATION TECHNOLOGY DHS (CISA)                |
| DEFENSE INDUSTRIAL BASE | DOD        | NUCLEAR REACTORS, MATERIALS AND WASTE DHS (CISA) |
| EMERGENCY SERVICES      | DHS (CISA) | TRANSPORTATIONS (TSA & USCG)                     |
| ENERGY                  | DOE        | water EPA  |



### Today's Risk Landscape

America remains at risk from a variety of threats:

#### Cyberspace: Foundational to Our World

- Automation, technology, and network communications have become increasingly essential to our daily lives.
- The amount of information and data stored electronically has grown.
- There is a vast interconnectedness of relationships and dependencies, for example
  - government private sector international
  - third-party vendors
  - linkages within organizations
- As a result, the country is dependent on the cyber resilience of its critical infrastructure, such as, the power grid, banking and financial systems, and telecommunications



#### A Growing Challenge

- Scale: The number of cyber attacks has never been greater.
- Sophistication : Cyber attacks are increasing in complexity.
- Trends: Attackers are increasing their advantage.
- Attack Surface: Growing volumes of data = more targets.



#### Threat Landscape

(U//FOUO) Threat to Critical Infrastructure Facilities, Networks and Sensitive Information

Damage to
Critical Infrastructure

Disruption to Critical Infrastructure

Theft of Intellectual Property

Theft of Sensitive Financial Transaction Data

Theft of Sensitive Information (PII)

Distributed Denial of Service (DDOS)

Web Defacement

State Actors with Greater Capabilites State Actors with Lesser Capabilites

Cybercriminals

**Criminal Hackers** 

**Terrorists** 

NOTE: Insider assistance may amplify the likelihood and impact of a Cyber Attack.



#### IT vs. OT

| SECURITY<br>TOPIC                        | INFORMATION<br>TECHNOLOGY | OPERATIONS<br>TECHNOLOGY  |
|--|---------------------------|---|
| ANTIVIRUS & MOBILE CODE COUNTER-MEASURES | Common & widely used      | Can be difficult to deploy                                      |
| SUPPORT<br>TECHNOLOGY<br>LIFETIME        | 3 to 5 years              | Up to 40+ years   |
| OUTSOURCING                              | Common/widely used        | Rarely used (vendor only)                                       |
| APPLICATION OF PATCHES                   | Regular/<br>scheduled     | Slow (vendor<br>specific,<br>compliance<br>testing<br>required) |
| CHANGE MANAGEMENT                        | Regular/<br>scheduled     | Legacy based –<br>unsuitable<br>for modern<br>security          |

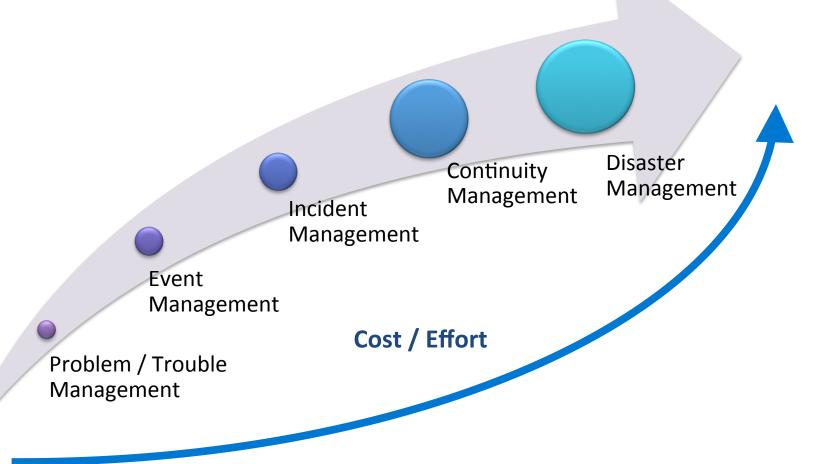
| SECURITY<br>TOPIC             | INFORMATION<br>TECHNOLOGY              | OPERATIONS<br>TECHNOLOGY  |
|-------------------------------|--|---|
| TIME CRITICAL CONTENT         | Delays are usually accepted            | Critical due to safety  |
| AVAILABILITY                  | Delays are usually accepted            | 24 x 7 x 365 x<br>forever<br>(Integrity also<br>critical)               |
| SECURITY AWARENESS            | Good in both private and public sector | Generally poor inside the control zone                                  |
| SECURITY<br>TESTING/<br>AUDIT | Scheduled and mandated                 | Occasional<br>testing for<br>outages / audit<br>for event<br>recreation |
| PHYSICAL SECURITY             | Secure                                 | Traditionally good  |

#### **How Are You Targeted by Foreign Intel?**



TLP: AMBER MANAGING CYBER RISK

# Operational Planning for Cyber Security Events, Attacks, and Contingencies





#### CSF and the State of Cybersecurity Management

### Status Quo: Practiced, Planned, & Resourced

#### IDENTIFY

- Asset management
- Business environment
- Governance
- Risk assessment
- Risk management strategy

#### PROTECT

- Access control
- Awareness and training
- Data security
- Information protection and procedures
- Maintenance
- Protective technology

#### DETECT

- Anomalies and events
- Security continuous monitoring
- Detection process

#### RESPOND

- Response planning
- Communications
- Analysis
- Mitigation
- Improvements

#### **RECOVER**

- Recovery planning
- Improvements
- Communications

Room for Improvement:
Discussed but not
Deliberate, Less Practiced,
Planned, & Resourced



#### A Wide Range of Offerings for Critical Infrastructure

- National Cybersecurity and Communications Integration Center (NCCIC)
  - US-CERT Operations Center
    - Remote / On-Site Assistance
    - Malware Analysis
    - Incident Response Teams
  - ICS-CERT Operations Center
    - ICS-CERT Malware Lab
    - Incident Response Teams
  - Cyber Exercise Program
- Cyber Security Advisors
- Protective Security Advisors
  - Homeland Security

- Preparedness Activities
  - National Cyber Awareness System
  - Vulnerability Notes Database
  - Security Publications
  - Technical Threat Indicators
  - Cybersecurity Training
  - Information Products and Recommended Practices
- Control Systems Evaluations
  - Cyber Security Evaluation Tool
  - ICS Design Architecture Reviews / Network Architecture Analysis
- Other Cyber Security Evaluations
  - Cyber Resilience Review
  - Cyber Infrastructure Survey
  - Cyber Hygiene service
  - Risk and Vulnerability Assessment (aka "Pen" Test)



#### **Contact Information**

#### **Evaluation Inquiries**

cyberadvisor@hq.dhs.gov

#### **General Inquiries**

cyberadvisor@hq.dhs.gov

#### **DHS Contact Information**

| Sean McCloskey Program Director, Cyber Security Advisor Program | Sean.mccloskey@hq.dhs.gov                  |
|---|--|
| Klint Walker Cyber Security Advisor, Region IV                  | Klint.walker@hq.dhs.gov<br>+1 404-895.1127 |

Department of Homeland Security
National Protection and Programs Directorate
Office of Cybersecurity and Communications





# Elections Security in a Connected World:

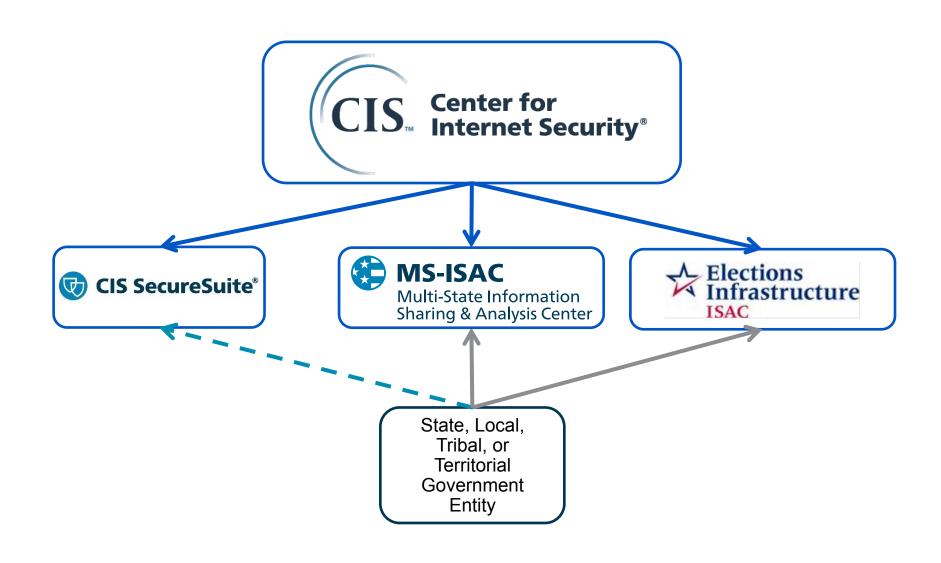
Your Guide to the Elections Infrastructure ISAC

Kateri Gill
June 10, 2019















#### **How We Got Here**

#### Summer 2016

•Public reporting of voter registration compromises

#### July 2017

•Election Critical Infrastructur e Working Group meets at MS-ISAC HQ October 2017-February 2018

•MS-ISAC Pilot for Elections (NJ, VA, IN, TX, CO, UT, WA)

#### March 2018

•EI-ISAC Official Launch















#### January 2017

- Intelligence Community AssessmentCritical
- •Critical Infrastructur e Designation

#### September 2017

- •Election Infrastructure Subsector Government Coordinating Council (EIS-GCC) established
- •MS-ISAC Pilot for Elections Approved

#### February 2018

•EIS-GCC votes to establish EI-ISAC



#### **About EI-ISAC Membership**

# Free and Voluntary No Mandated Information Sharing Registration is the only requirement!

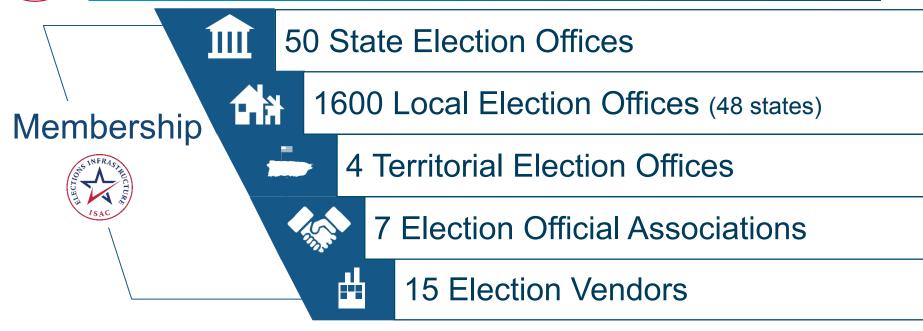


To join or get more information:

https://learn.cisecurity.org/ei-isac-registration



#### Membership and Albert Overview (as of 5/30)



49 State Election Sensors

23 Bottom-Up Local Election Sensors

71 State-Funded Local Election Sensors

2 Territorial Election Sensors



Albert Sensor Coverage

TLP: AMBER



#### **Alabama Membership**

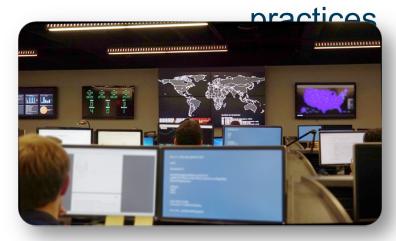
Alabama Office of the Secretary of State
Mobile County Probate Court
St. Clair County Probate Court
St. Clair County Circuit Clerk



#### **An Elections-focused Cyber Defense Suite**

- 24x7x365 network monitoring
- Incident response and forensics
- Threat and vulnerability monitoring

- Election-specific threat intelligence
- Training sessions and webinars
- Promote security best



www.cisecurity.org/ei-isac



#### 24 x 7 Security Operations Center

#### Central location to report any cybersecurity incident

#### Support:

- Network Monitoring Services
- Research and Analysis

#### Analysis and Monitoring:

- Threats
- Vulnerabilities
- Attacks

#### • Reporting:

- Cyber Alerts & Advisories
- Web Defacements
- Account Compromises
- Hacktivist Notifications



To report an incident or request assistance:

**Phone**: 1-866-787-4722

Email: soc@cisecurity.org



#### **Perception Management**





#### What Could Possibly Happen?

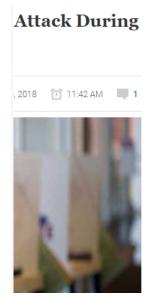
Florida Man Admits Killing Goat and Drinking Its Blood For Pagan Sacrifice, Would Still Like to be Senator gq.com/story/augustus...

5:52 PM - Oct 5, 2015



Yes, This Libertarian Senate Candidate Really Did Sacrifice Everything you need to know about Augustus Sol Invictus gq.com





Florida Man Arrested For Beating Drag Queen With Tiki Torch While Dressed as Member of KKK, Now Running For Mayor |

blogs.browardpalmbeach.com/pulp/2014/10/d...

10:03 PM - Oct 23, 2014

○ 678 ○ 1,154 people are talking about this



#### **Computer Emergency Response Team**

- Incident Response (includes on-site assistance)
- Network & Web Application Vulnerability Assessments
- Malware Analysis
- Computer & Network Forensics
- Log Analysis
- Statistical Data Analysis
- Penetration Testing

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Email: soc@cisecurity.org



#### **Understanding the News**

#### **Data Breach or Hoax?**

Voter Records for Sale on RAID Forums

October 5, 2018

Identified by Anomali Labs and Intel 471

Malicious Actor "Downloading" - voter reg data from 19 states (35 million records)

Pricing: \$150-\$12,500

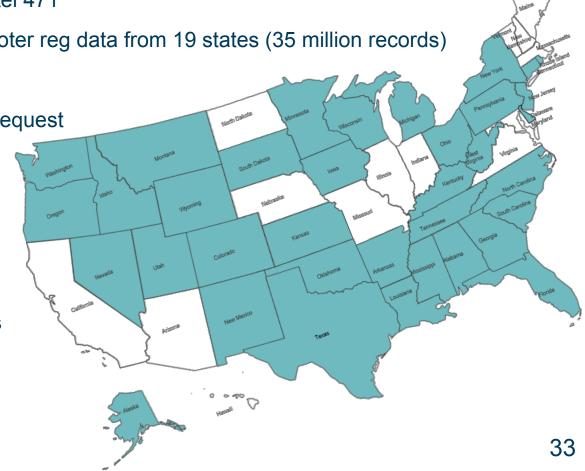
Information typically available by request

October 17, 2018

- "Backdoor" claim
- Updated data on a weekly basis

October 20, 2018

- All 50 voter registration databases
  - 200 million voter records
  - \$61,000





#### **Elections Weekly News Alert**

#### EI-ISAC analysis to provide key context

- General election industry or election security reports
- Legislative action on election security issues
- Best practice examples from peers in the election community
- General technology/cybersecurity stories that may have an election link/impact

#### Released on Wednesday afternoons

TLP: WHITE EI-ISAC Weekly News Alert

TO: All EI-ISAC Members and Partners

DATE: March 28, 2018

SUBJECT: EI-ISAC Weekly News Alert 3/28/2018

The EI-ISAC Weekly News Alert is a summary of open-source reporting on election security and topics that may be of interest to elections officials. The Weekly News Alert is intended to provide situational awareness of the cyber risk landscape and cybersecurity best practices to election officials through open source news reporting and analysis by the EI-ISAC and other experts. If you would like to submit security-related stories that may be of interest to the elections community, please contact elections@cisecurity.org.

U.S. Consolidated Appropriations Act of 2018 Grants \$380 Million for Election Security - Reuters (3/21/18)

TLP: WHITE On March 23, 2018, President Trump signed into law the \$1.3 trillion Consolidated Appropriations Act of 2018. The Act appropriates the outstanding \$380 million from the Help America Vote Act (HAVA) for the purposes of improving election security. The Election Assistance Commission (EAC) will distribute funds within 45 days, with a minimum funding threshold of \$3 million per state and \$600,000 per territory. States must agree to match 5% of grant funds within two years. Separately included in the Act is a mandate for several federal entities to launch a comprehensive supply chain review prior to the acquisition of new technology and/or associated equipment.

EI-ISAC Analyst Note: Though the supply chain provision does not affect state or local election offices, it further highlights the wider community's focus on addressing potential supply chain and procurement security risks. The CIS Handbook for Election Infrastructure Security includes an appendix addressing security in supplier relationships and the EAC provides example procurement resources from multiple states.

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#### **Cybersecurity Spotlight**

#### Key Security Terms and Best Practices

- What it is
- Why does it matter
- What you can do

#### Released on Friday afternoons

TLP: WHITE

Elections
Infrastructure
ISAC
Cybersecurity Spotlight
March 30, 2018

#### Encryption

What it is: Encryption is the process whereby data is converted from a readable form (i.e., plaintext), to an encoded form (i.e., ciphertext). This encoding is designed to be unintelligible except by parties that possess a key to reverse the encoding process. This reversal process is called decryption. Data is encrypted using a mathematical algorithm that relies on passcodes (keys) that are typically randomly generated. The most trusted encryption algorithms are considered secure because they have been publicly available for years and have not been broken. An attack on data encrypted with a trusted encryption algorithm could take years for even the most powerful computers to break.

There are two types of encryption; asymmetric (public key) encryption and symmetric (private key) encryption.

|         | Asymmetric  | Symmetric                          |
|---------|---|------------------------------------|
| Keys    | 2 keys – public (to be shared) and private  | 1 key - private (secret but shared |
| _       | (secret and possessed by only 1 person)   | between two or more partners)      |
| Process | The sender encrypts information with recipient's public key and the recipient decrypts information with their private key |                                    |
| Speed   | Slower  | Faster                             |

An easy way to understand these two types of encryption is two different types of lockboxes. In symmetric cryptography, you have a lockbox with one slot for a key. You make two copies of the key, and you give one to your friend. You lock the box with your copy, and when your friend comes along, they use their copy of the same key to unlock it.

Asymmetric cryptography is different. It's more like a deposit dropbox at a bank. The bank publishes the location of the dropbox (the public key), and once you drop your deposit into it, it's secure until the bank opens the box with the one and only copy of their key (the private key). Anyone can make a deposit once they know the location of the box, but only the bank can get deposits out.

Why does it matter: Encryption allows for the confidential storage and transmission of data, as well as proof that it originated with the person who claims to have sent it. Encrypting personally identifiable information (PII) with good encryption algorithms protects the data from accidental disclosure in the case of a data breach or malware infection. Elections offices may maintain a number of systems that utilize encryption and are responsible for identifying data that should be encrypted. This may



#### **Employee Mistakes**





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## **Election-specific Cyber Alerts**

- Short e-mail alerts regarding immediate threats
  - Targeted at both executive and technical staff
- Provides overview of activity and actionable recommendations
  - Executive Overview
  - Executive Recommendations
  - Technical Overview
  - Technical Recommendations

TLP: AMBER
MS-ISAC ELECTIONS PILOT CYBER ALERT

TO: MS-ISAC Elections Pilot Participants



### **Malicious Code Analysis Platform**

A web based service that enables members to submit and analyze suspicious files in a controlled and non-public fashion

- Executables
- DLLs
- Documents
- Quarantine files
- Archives
- URLs

Or just forward suspicious emails to submission@malware.cisecurity.org



#### **Ukraine's Critical Infrastructure - 2015**

- Boryspil International Airport – Kiev, Ukraine
- Power Grid Shut Down
- 225,000 customers lost power for 6 hours
- BlackEnergy Malware
- Attributed to Russia



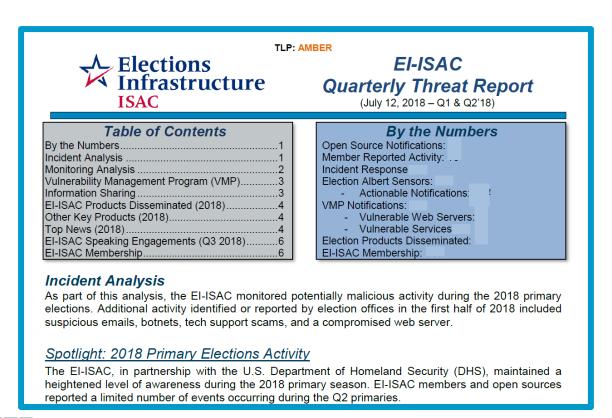






#### **Elections Sector Quarterly Report & Call**

- Compiles analysis of elections-specific events identified by/reported to EI-ISAC
- Provides highlights of EI-ISAC activities

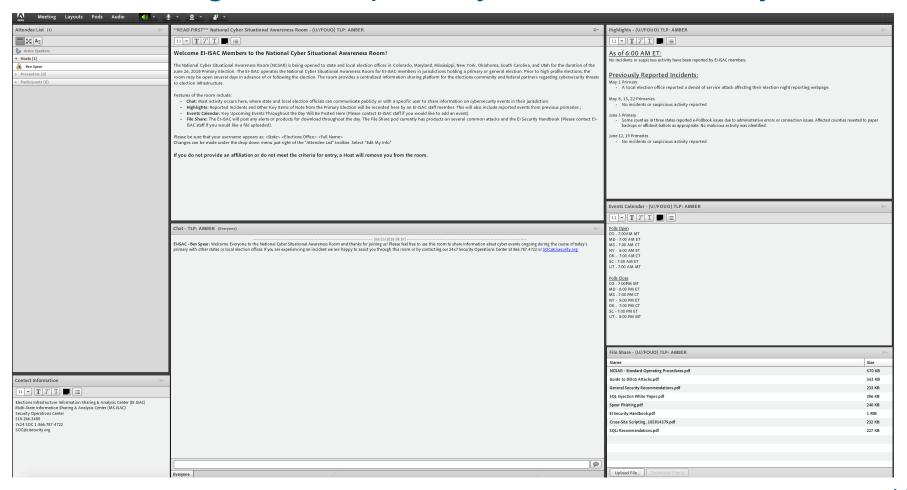


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#### **Election Day Situational Awareness Room**

 Information sharing open to election officials and their designees on primary and election day



TLP: AMBER



# **ISAC Annual Meeting**

2020 Annual Meeting
Baltimore, MD
Date TBD



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# Handbook for El Security

- Intended for Elections Officials and Technical Support Teams
- Analyzes the risks of key election system components
- Describes specific technical controls and processes to improve security
- Assessment tool available



**Order Hard Copies:** 

https://learn.cisecurity.org/ei-handbook

https://www.cisecurity.org/elections-resources



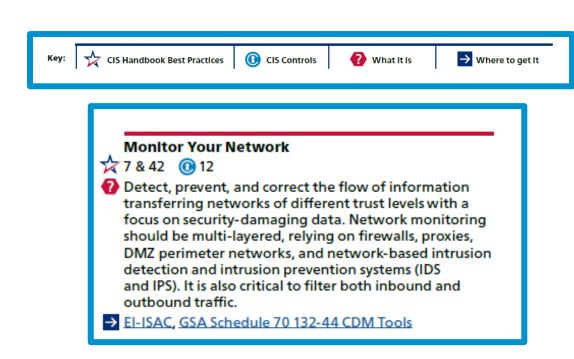
### **Where to Start**

| Best<br>Practice | Best Practice Title   | Asset<br>Class | Connectedness<br>Class  | Priority | Potential<br>Resistance |        | Ongoing<br>Maint. Cost |
|------------------|---|----------------|-------------------------|----------|-------------------------|--------|------------------------|
| 4                | Only utilize approved and managed USB devices with appropriate device encryption and device authentication  | Devices        | Network<br>Connected    | High     | No                      | Medium | Low                    |
| 8                | If wireless is required, ensure all wireless traffic use at least Advanced Encryption Standard (AES) encryption with at least Wi-Fi Protected Access 2 (WPA2) | Devices        | Network<br>Connected    | High     | No                      | Medium | Low                    |
| 14               | Perform system testing prior to elections (prior to any ballot delivery), such as acceptance testing  | Process        | Network<br>Connected    | High     | No                      | Medium | Low                    |
| 17               | Deploy application whitelisting   | Software       | Network<br>Connected    | High     | No                      | Medium | Low                    |
| 18               | Work with election system provider to ensure base system components (e.g., OS, database) are hardened based on established industry standards                 | Software       | Network<br>Connected    | High     | No                      | High   | Low                    |
| 55               | For data transfers that utilize physical transmission, utilize tamper evident seals on the exterior of the packaging  | Devices        | Indirectly<br>Connected | High     | No                      | Medium | Low                    |
| 64               | Only use the devices for election related activities  | Software       | Indirectly<br>Connected | High     | No                      | Medium | Low                    |



# **Election Security Services Checklist**

- Prioritized action items and tools tied to the El Handbook and CIS Controls
- Descriptions of key cybersecurity tools
- Links to available services from EI-ISAC, DHS, or GSA





The Elections Infrastructure Information Sharing and Analysis Center (EI-ISAC) is a voluntary and collaborative effort based



DHS Continuous Diagnostics and Mitigation Program (CDM)

The Continuous Diagnostics and



**GSA Cooperative Purchasing Program** With GSA's Cooperative Purchasing



### **Third Party Breach Threat**

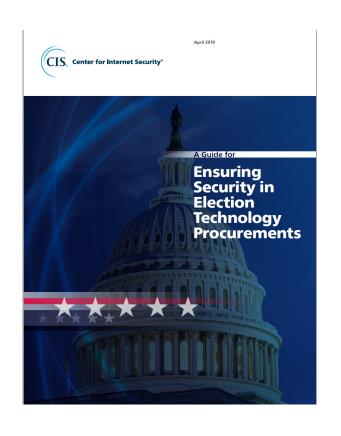


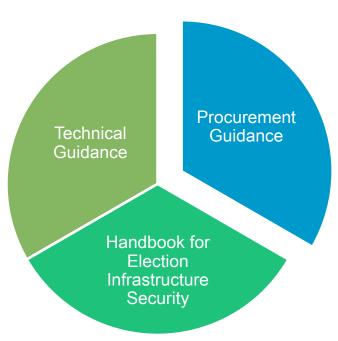


**TLP: AMBER** 



# **Election Technology Procurements**







#### **An Elections-focused Cyber Defense Suite**

 24x7x365 network monitoring

Election-specific threat

If nothing else, know who you can contact and let us know who we should notify if we see anything.

When you hand me your contact information, let me know if you have special requests.



Join Us: learn.cisecurity.org/ei-isac-registration





# EI-ISAC 24x7 Security Operations Center 1-866-787-4722 SOC@cisecurity.org

#### **ELECTIONS@CISECURITY.ORG**

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